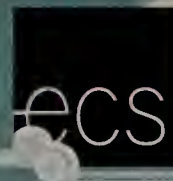


# NETWORKWORLD

THE CONNECTED ENTERPRISE = JUNE 3, 2013

SPECIAL  
ISSUE  
**3** OF SIX



ENTERPRISE  
CLOUD  
SERVICES

## HOW TO BUILD A **PRIVATE CLOUD**

Four must-have  
features of a  
successful  
private cloud



# CLOUD CONSISTENCY VS. CLOUD CONFUSION

## MICROSOFT VS. VMWARE

With Microsoft, you get a consistent cloud platform across your on-premises environment, Windows Azure, and your service provider. Windows Server 2012 and System Center 2012 deliver a comprehensive set of tools to provision and centrally manage infrastructure and applications across clouds. VMware keeps you guessing with a public cloud strategy that's still in development and virtualization-centric management tools. Will you bet on cloud consistency or cloud confusion?

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FROM THE EDITOR | JOHN DIX

# A perspective on IP traffic growth

**I**T professionals, perhaps more than anyone, have a sense of just how fast things are changing in this information-driven world. But Cisco's latest Visual Networking Index, an ongoing study of global IP traffic, adds perspective that may influence some of your thinking when it comes to long-range capacity planning.

Cisco says "global IP traffic will pass the zettabyte threshold [a zettabyte is a billion terabytes] by the end of 2015, and will reach 1.4 zettabytes per year by 2017" (see [tinyurl.com/lpojmi](http://tinyurl.com/lpojmi)). That by itself is remarkable, but even more so when viewed in historical context. Cisco offers the chart below.

Said another way: IP traffic jumped more than fivefold in the last five years and is expected to keep ramping up at a 23% compound annual growth rate to 2017.

Of all IP traffic, consumer loads account for the bulk, some 82%, Cisco says, although business IP traffic is growing at close to the same rate, ratcheting up 21% per year for the same period.

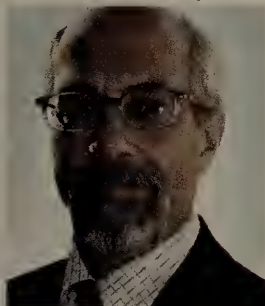


| Year | Global Internet Traffic     |
|------|-----------------------------|
| 1992 | 100 gigabytes per day       |
| 1997 | 100 gigabytes per hour      |
| 2002 | 100 gigabytes per second    |
| 2007 | 2,000 gigabytes per second  |
| 2012 | 12,000 gigabytes per second |
| 2017 | 35,000 gigabytes per second |

the rate of fixed IP traffic. By 2017, more than 11 exabytes of mobile traffic will be traversing the airwaves per month (an exabyte being a billion gigabytes).

Regarding video uptake, Cisco says "global IP video traffic will be 73% of all IP traffic (both business and consumer) by 2017, up from 60% in 2012."

Hopefully your plans account for this dramatic growth. If not, time to get back to the drawing board.



As of last year 74% of IP traffic still originated from PCs, but that is expected to drop to 49% by 2017 as traffic from devices such as tablets and smartphones skyrockets (at 104% and 79% growth rates, respectively). That is, of course, why companies are scrambling to embrace BYOD and accounts for the spiraling demands on corporate Wi-Fi networks. Regarding the latter, Cisco predicts that "traffic from wireless and mobile devices will exceed traffic from wired devices by 2016."

In 2012 there were about two networked IP devices for every person on the planet, and by 2017 that number will approach three devices per person.

"Globally, mobile data traffic will increase thirteenfold between 2012 and 2017," Cisco predicts. That's a compound annual growth rate of 66%, three times

**6 Bits** Comments, Blogs and Online

**8 Trend Analysis** Microsoft revamps via 'cloud-first engineering'.

**10 Trend Analysis** HP updates tools, services for app modernization.  
BY JOAB JACKSON,  
IDG NEWS SERVICE

**12 Trend Analysis** Network builders tackling cell vs. Wi-Fi choices.  
BY STEPHEN LAWSON,  
IDG NEWS SERVICE

**14 Trend Analysis** Justice Dept. lays out cybersecurity basics.

**16 Trend Analysis** 7 steps to securing Java.  
BY SUSAN PERSCHKE

**18 Trend Analysis** Lync-Skype integration live now worldwide.  
BY JUAN CARLOS PEREZ,  
IDG NEWS SERVICE

**20 Q&A** View from inside Verizon's security team.

**22 Tool Shed** Gearhead Summer Reading List.  
BY MARK GIBBS

**23 Cool Tools** Logitech impresses with its wireless headset.  
BY KEITH SHAW

**24 Special Edition** Enterprise Cloud Services: How to build a private cloud  
Avoiding private cloud failures (p. 28); OpenStack vs. CloudStack vs. Eucalyptus (p. 30).  
BY CHRISTINE BURNS

**34 Backspin** 10 things from my 20 years with NW.  
BY MARK GIBBS

**34 Net Buzz** Microsoft's opening act since Windows 95.  
BY PAUL MCNAMARA

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### PC market's unreliable hardware

➔ THE ISSUE HERE is that computers are so fast now, that micro-changes are not enough. It used to be that CPU speeds were doubled every 18 months. Now performance gains are coming from faster memory, SSD drives, faster networking, and performance improvements in Windows, enabling less-powerful machines to run Windows. There isn't a need to upgrade your computer every one to two years anymore (Re: "IDC: PC sales being crippled by tablets; Windows 8 part of the problem"; [tinyurl.com/n6xkexy](http://tinyurl.com/n6xkexy)).

I, as well as many friends and colleagues, are fed up with the security holes, malware, slow release schedules, poor performance and memory bloat of Windows. There are better solutions that may cost a little more, but last a lot longer, are better-performing and are more secure.

*Armand Welsh*

### Reliable LinkedIn endorsements

➔ BOTTOM LINE: YOU can't trust endorsements, because they are too easily and readily dispensed (Re: "Lawyer questions legal ethics of LinkedIn endorsements"; [tinyurl.com/kjljp8g](http://tinyurl.com/kjljp8g)).

On reading this article I hid the endorsement from friends and other contacts who can't know whether their opinions are valid — that way I can tell people that they can contact any of those remaining as a reference.

As a result I only have a few endorsements — but those are reliable.

*Near Genius*

### Too many devices spoil productivity

#### ➔ TOO MUCH TECH

poorly used is counter-productive. When five devices are clamoring for our attention, focus is fractured and the time spent shuffling devices affects actual production. Not to mention being on professional and social networks during work hours (Re: "Rude and overworked? Blame tech"; [tinyurl.com/n7avgct](http://tinyurl.com/n7avgct)).

Ask yourself this: Would you want your surgeon taking iPhone calls in the middle of a procedure on you?

*johnkies*

### Internet sales tax: Another view

➔ I HAVE TO disagree with your editorial in the May 6 edition (Re: "Time is now for Internet retail tax"; [tinyurl.com/kzrvpgn](http://tinyurl.com/kzrvpgn)).

Yes \$23 billion is a huge potential tax windfall. The biggest problem I see with it, however, is that this windfall will not go to help local retailers. Instead, it will go to the same group of financial "wizards" that spent the vault bare during boom times, and couldn't figure out that the party was over and tax income was drying up until every state, county and municipality was nearly bankrupt. Neither can they figure out a way to make it "fair" for local brick-and-mortar merchants without requiring more taxes from somewhere else.

And *Network World* sees the best way of rewarding fiscal irresponsibility at all levels as "give them more money"? Nope. Stop this bad bill before it gets anywhere and cut off the money supply from politicians and elected officials who don't get that austerity begins in government. If fairness is the goal, then make it fair for the local retailer on the basis of level playing field, and not by burdening the Internet retailer with a tax that will do little more than fill the coffers until it can be all spent... leaving the politician with

his or her hand out demanding more.

*Too\_Old\_For\_IT*

### The hidden costs of using Xbox One

➔ I UNDERSTAND THAT the Xbox One wants to appeal to a new wave of consumers, which is fine, but as I understand, we will have to pay Microsoft to access those services (Netflix, Hulu, Internet, etc.) on

the console, while already paying for our monthly subscriptions that we can watch for free on other devices (Re: "Why Xbox One gaming has been an afterthought"; [tinyurl.com/mmv75ho](http://tinyurl.com/mmv75ho)).

I don't mind that it's going to be a "complete" entertainment system; I do mind paying Microsoft extra for the privilege to use it. In an economy where people are feeling the pinch, I think it's going to be a tough sell.

*Rich Carrillo*

Would you want  
your surgeon  
taking iPhone  
calls in the  
middle of a  
procedure?

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## Rude and overworked? Blame tech

**IT EXECS SAY** employees are getting ruder on the job, and they're blaming mobile technology for the rise in bad manners. IT staffing specialist Robert Half Technology (RHT) asked 2,300 CIOs what effect the increased use of mobile electronic gadgets has had on workplace etiquette, and 64% said etiquette breaches have increased. Meanwhile, a majority of IT executives today find themselves working outside of traditional business hours — a practice enabled by the proliferation of mobile devices. Polled by RHT, 73% of CIOs said they check in with work "often" or "somewhat often" on evenings and weekends. [tinyurl.com/n7avgct](http://tinyurl.com/n7avgct)

## A new Start for Win 8.1

**MICROSOFT CUSTOMERS** clamoring for a Start button and menu in Windows 8 will get their wish partially fulfilled in the upcoming OS update. Windows 8.1 will not have a Start menu, but it will have something very close to a Start button that will trigger several key Start menu-like features. Some of the early complaints about Windows 8 focused on the fact that it has two user interfaces: the radically redesigned "Modern" one based on tile icons and

optimized for touch screen devices, and a traditional one similar to Windows 7's for running legacy applications that nonetheless lacks the Start button and menu. Critics say the Modern UI requires a steep learning curve for the average user, and toggling between the two interfaces is awkward. But Windows 8.1 adds a Start-like button, as well as the possibility to view all the applications on the device and sort them by name, date installed, most used or category. The OS update also will allow users to boot directly to the traditional desktop interface. [tinyurl.com/kevsujz](http://tinyurl.com/kevsujz)

## The cloud goes global

Cloud computing providers are increasing their international footprints around the globe. Here are some of the expansions that have been announced in the last half-year:

**Amazon Web Services:** Launched **Australian** data center in **Sydney** in November, expanded CloudFront content delivery network (CDN) to **Spain** and **South Korea**

**EMC:** Announced cloud portfolio in conjunction with Capgemini in **Brazil**

**Google:** Announced expansion plans for **South Carolina** and **Iowa** data centers in the U.S. while expanding or building new data centers in **Finland**, **Chile**, **Singapore** and **Taiwan**

**IBM:** Announced expansions in both **Germany** and **Mexico** recently

**Rackspace:** Announced data center expansion plans in **London** and opened its first **Australian** data center in February. It also created a new partner network, to develop service providers in **South America**, **Asia** and **Eastern Europe**

**Savvis:** 85,000 square foot expansion of data center space in North America, Europe and Asia, including new operations in **London** and **Hong Kong**

**Verizon Terremark:** Recently expanded data center footprints in **Dallas**, **London** and **Australia**

SOURCE: TECHNOLOGY BUSINESS RESEARCH

## The global cloud

**AS COMPETITION** in cloud computing intensifies, some of the biggest players are looking beyond their domestic borders. Most recently Savvis added 85,000 square feet of data center space, including centers in London and Hong Kong. Microsoft announced last month the expansion of its services across Japan, and in recent months Amazon Web Services, Rackspace, Google, IBM and others announced data center expansions in emerging international markets. "Now that public cloud computing is maturing, customers are seeking cloud on a more global level and vendors are looking to monetize this demand," says Jillian Mirandi, an analyst at Technology Business Research. Reasons for international expansion include: country-specific data privacy laws that require certain types of information to

be given safe harbor within a country's domestic borders; and overseas companies' reluctance to store sensitive information in the U.S. due to government surveillance concerns. [tinyurl.com/ldkhuvs](http://tinyurl.com/ldkhuvs)

## AWS ties logins to Google, Facebook

**USING A** new API announced by Amazon Web Services, developers can use Amazon.com, Facebook, or Google's sign-in systems for their cloud-based apps. Amazon calls the concept web identity federation, and the new AWS Security Token Service (STS) API simplifies the development process by letting users integrate web-based sign-in platforms with their apps without having to write any server-side code. The API— which is called AssumeRoleWithWebIdentity — requests temporary security

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credentials for users that have been authenticated using one of the three public identity providers. An app can then use the temporary credentials to access AWS resources, such as Simple Storage Service (S3) objects, DynamoDB tables, or Simple Queue Service queues.  
[tinyurl.com/ku23ra4](http://tinyurl.com/ku23ra4)

## Cisco pockets JouleX

CISCO IS acquiring privately held JouleX, a developer of enterprise IT energy management tools, for \$107 million in cash. JouleX, based in Atlanta, provides software for enterprise and data center energy management, analytics, policy governance and compliance. Cisco says JouleX's cloud-enabled software will

complement its own EnergyWise energy management products and provide customers with a way to manage energy usage without the use of device-side agents, hardware meters or network configurations.  
[tinyurl.com/lgaruqu](http://tinyurl.com/lgaruqu)

## BYOD dampens corporate PC buying

COMPANIES' BRING-YOUR-OWN-DEVICE (BYOD) policies are affecting how many traditional PCs enterprises purchase and contributing to a global sales slump, according to IDC. About 25% of employees in businesses with more than 10 workers have bought the primary PC they use for work, which is a large enough slice to meaningfully reduce corporate buying. "[Employee-purchased] PCs are significantly higher in number than we thought. We believed it was just 5% to 10%, but it's more than double that," said analyst Bob O'Donnell. IDC forecasts that PC shipments will contract 7.8% this year compared to 2012, followed by a smaller slump of 1.2% in 2014. If IDC's prognostication is on target, the 2012-2013 stretch would be the first time PC shipments will have declined for two consecutive calendar years since the research firm started tracking the market in 1994.  
[tinyurl.com/mfazm63](http://tinyurl.com/mfazm63)

### IT VIDEO

#### Visit the Japan Tech Hall of Fame

Take a tour of Japan's greatest hits in technology in this new Osaka exhibition, including the Walkman and Aibo robot dog.  
[tinyurl.com/mbor75x](http://tinyurl.com/mbor75x)

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GOOD

BAD

UGLY

good

## Faster than a speeding Google Fiber...

A RESEARCH team led by Bell Labs' Xiang Liu has published an article in Nature Photonics describing a way to send and receive information at 400Gbps across 12,800km of optical fiber – an enormous potential gain of both speed and effective distance compared to current technology. Liu tells us that the idea, likened by the BBC to the wave-canceling technology used in headphones that block outside noise, is actually simpler than that.

## PayPal no friend of teen bug finder

A 17-YEAR-OLD German student contends PayPal has denied him a reward for finding a vulnerability in its website. Robert Kugler said he notified PayPal of the vulnerability on May 19. He said he was informed by email that because he is younger than 18 years old, he did not qualify for its Bug Bounty Program. He will turn 18 next March.

PayPal, which is owned by auction site eBay, outlines the terms and conditions for its Bug Bounty Program on its website, but does not appear to have an age guideline. PayPal officials did not have an immediate comment. Many companies such as Google and Facebook have reward programs intended to create an incentive for researchers to privately report issues and allow vendors to release fixes before hackers take advantage of flaws.

bad

## Galaxy S3 allegedly explodes

SAMSUNG, COMING off a glitzy New York City extravaganza/horror show to introduce its Galaxy S4 Android smartphone, apparently set off some real fireworks at the home of one of its Galaxy S3 customers. He posted to Reddit about his S3 exploding in the middle of the night and burning his pillow and bedsheets and provided graphic photos.

The customer is reportedly working with Samsung to help them investigate the matter, and he hopes, replace his phone and bedroom items.



IMAGES COURTESY  
[WWW.IMGUR.COM/A/9ZXZK](http://WWW.IMGUR.COM/A/9ZXZK)

# Microsoft revamps via 'cloud-first engineering'

At TechEd: Windows Server, SQL Server, others get second major refresh in a year

BY TIM GREENE

**MICROSOFT TODAY** is showing off improvements to most of its enterprise infrastructure software designed to make it simpler for businesses to deploy hybrid cloud services that can allocate resources as needed.

The announcements at its annual TechEd North America conference come about a year after the company delivered a major overhaul of the same platforms - Windows Server, SQL Server, Visual Studio and System Center as well as new features in its Azure cloud service and InTune PC- and device-management service.

This is a new accelerated pace the company is adopting for updates and upgrades to its software offerings, driven by its experience developing features and management tools it needs to run Azure, says Brad Anderson, Microsoft vice president of Windows Server and System Center. He calls this cloud-first engineering.

"We are literally refreshing every one of the on-premises infrastructure products from Microsoft," says Anderson, who will be detailing the new features at the conference in New Orleans.

These include Microsoft's much touted Hekaton technology which can speed up the transaction-processing time of SQL server transactions and improved deduplication that can reduce the storage footprint of data in Windows Server more than 90%, he says.

Upgrades to Visual Studio include tools for IT staff to create virtual machines of application servers that are glitchy and ship them to developers where they can be fixed offline, he says.

Many of the new features were proved first in Azure and are now being pushed into on-premises products, he says.

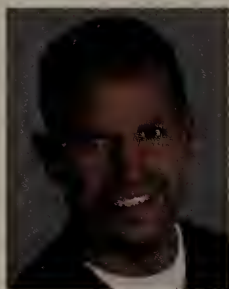
All the new versions will be available for preview later in June via download from Microsoft sites and all except SQL Server will ship by year-end.

The company will be releasing Windows Azure Pack, which lays the Azure Web portal to Windows Server and System Center on-premises products.

Anderson will also describe some of the new features coming with Windows 8.1, the first major upgrade to the new desktop operating system. Here's more about what Microsoft has in store at TechEd:

**Windows Server 2012 R2:** Windows

Server has advances in software-defined networking that include partner announcements about extending and enhancing Hyper-V network virtualization. This includes a site-to-site VPN gateway that automatically creates secure links between data centers and assets in service provider networks.



**“We are literally refreshing every one of the on-premises infrastructure products from Microsoft.”**

**BRAD ANDERSON, MICROSOFT VP OF WINDOWS SERVER AND SYSTEM CENTER**

Through software, storage can now be accommodated on commodity server hardware rather than dedicated SAN infrastructure.

Windows Server can also deduplicate data, consolidating repetitive strings so the data occupies less space. He says a demonstration will show how the data footprint for a virtual desktop infrastructure deployment can be reduced 95%.

Hyper-V virtualization within Windows Server can replicate copies of data to service provider data centers and then enable further replication by the providers for purposes of disaster recovery.

A new hybrid cloud feature enables stretching corporate computing resources into a public cloud by moving Web servers into a public cloud while retaining their old IP addresses and leaving the data tier back in the corporate data center.

The new version of the server simplifies setting up Active Directory Federated Services, which enables single sign-on to related Web applications during a single online session, essentially extending Active Directory to Azure.

A feature called Windows Server Work Folders enables replicating data from local hard drives to a data center, then re-replicating it out to other devices.

**SQL Server 2014:** The latest version will include Hekaton, the Microsoft code name for its new in-memory processing for applications in the database that the company says can improve the number of transactions per second. Customers will attest to increases of 15 times on the same hardware, Anderson

says. There will be a demonstration of this from a business intelligence perspective.

SQL Server has the ability to do backup and disaster recovery to Azure.

**System Center:** This server will have the same portal that Azure had that is being enabled by Azure Pack. This could be used with System Center, for example, to enable end users in a department to create new virtual machines within cloud infrastructure based on policies set up by IT. "It's self-service, exactly as if you were to go to Azure," Anderson says.

**Visual Studio 2013:** This software development platform can be tied in to Azure so when developers are ready to test whether new applications will scale up they can create virtual machines within Azure on which to run the tests, then turn off the virtual machines when testing is done.

The new version gives individuals visibility into portions of the code other development team members are working on, what tests have been run and access to logs that show who has worked on what blocks of code. They can also chat natively within Visual Studio with other developers.

Visual Studio's connection to System Center has improved the time to resolution of problems that are found with apps in production. When IT encounters such problems it can snapshot the server on a virtual machine that the developer can work on offline, find a fix and publish it to IT to roll out as an update.

**Azure:** Microsoft is revising the billing model for Azure for Virtual Machines, Web Roles and Worker Roles services so customers pay per minute rather than per hour, which gives customers the opportunity to save money via more precise charges.

**InTune:** This service for PC and device management and protection is being expanded to do a degree of mobile device management for Windows, Apple iOS and Android devices. Support for Android is new.

With the feature Anderson says IT could set up policies for the devices that are automatically applied when devices are registered to the service by end users. The end users could then self-provision the applications they need to get their jobs done.

A demo will show how the service can wipe corporate data off a worker's device and leave the worker's data intact. ■

# 144,000

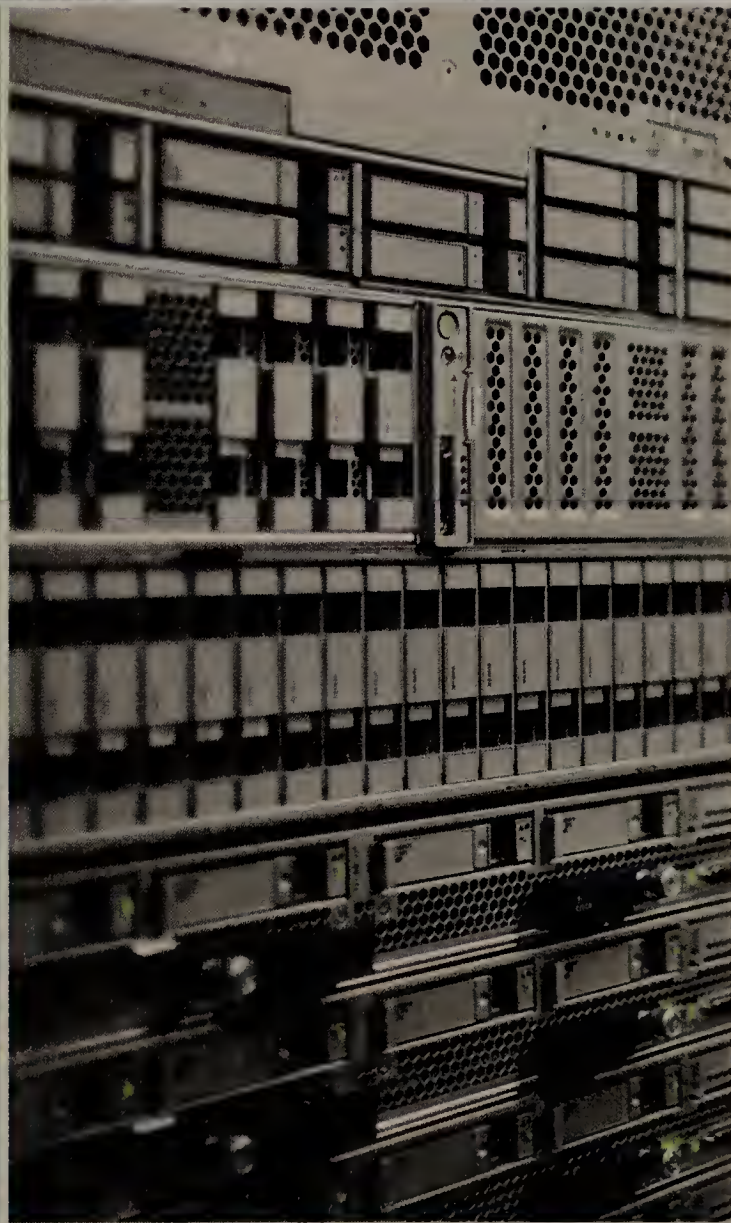
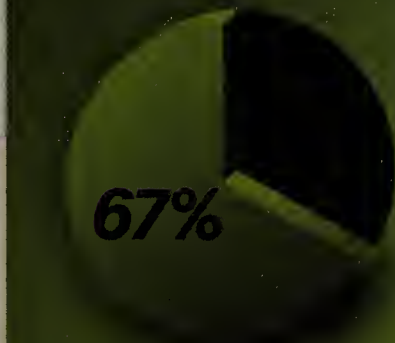
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## 67%

*Reduction in  
Desktop TCO*

67%



# 5,000

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# HP updates tools, services for app modernization

Today's enterprise developer needs a different skillset than one required in years past

BY JOAB JACKSON, IDG NEWS SERVICE

**HP HAS** updated a number of its software packages and services to help developers and IT managers modernize their applications so they will better fit into today's always connected environment.

Enterprise software users now "interact with consumer apps constantly, and those experiences are shaping the demands on the enterprise applications they use as well," says Franklin Grosvenor, HP's vice president for enterprise mobility and social business services.

In a recent survey conducted on behalf of HP, nearly 80% of corporate chief marketing officers expressed frustration in how badly designed customer-facing enterprise applications were, from the perspective of the users.

Today's enterprise software developer has a different set of requirements than in years past, Grosvenor explained.

"Historically, most enterprise application developers start with a set of features and functions they have to deliver. This is starting to change," Grosvenor says. "Increasingly, the demand is to deliver a business outcome and a desired experience to the user. You do that through orchestrating features and functions in a way that is compelling."

To this end, the company has added more user interface expertise to its consulting practice. The HP User Experience Design Services, part of the company's consulting service, can help walk organizations through the process of building user-friendly enterprise applications.

"The user experience transcends the data, or the user interface. It's not the font size or the color schemes that you paint over top of the application. It is how the user moves through an application in a way that is intuitive. [Users] shouldn't have to sit through classroom training or pour through online training to understand what to do next," Grosvenor says.

The consulting service interviews end

users — either customers or employees — to determine their needs, as well as works to understand the client's business process and IT infrastructure. The results of this research, which can be part of an organization's application modernization project, can speed the process of designing an appealing, productive application, Grosvenor says.

collects statistics on which features are used, as well as how quickly the mobile application responds to user commands.

Version 9.22 software of RUM is the first that can monitor native Android applications. Previous versions could only monitor Web applications on the Android platform.

Also in the portfolio is the newly updated

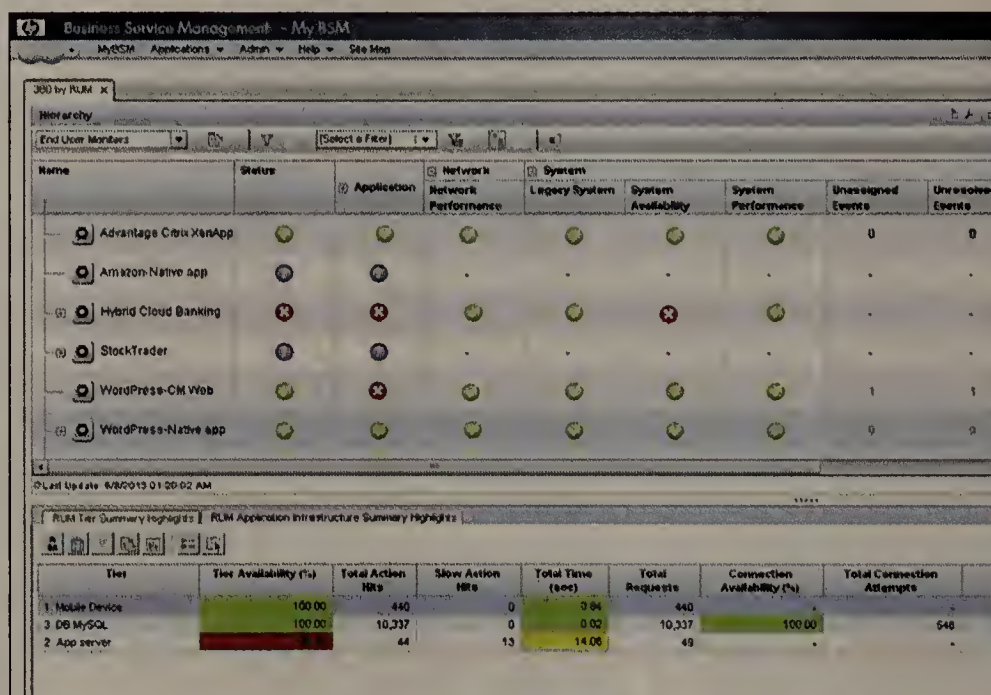
HP Performance Anywhere APM software. Version 1.1 of the software offers predictive analytics that can alert administrators when a service is degrading, and can track performance of applications across cellular networks.

The company has also released a collection of software development kits (SDK), demo programs and application cookbooks — under the name of HP Anywhere Developer Zone — aimed at helping developers design more effective enterprise mobile applications.

For those organizations interested in updating their back-end infrastruc-

ture, HP has released a set of reference architectures, called HP Application Integration to Cloud, for developing an application that can run on private or public clouds, using middleware from Tibco and Red Hat. Such infrastructure is best suited for high-performance throughput heterogeneous technology systems that require strict service-level agreements, says Tom Hall, HP's worldwide cloud services marketing manager.

As shipments of personal computers flag, financial analysts have looked to the enterprise mobile market as one area that could help boost HP's bottom line. ■



HP RUM 9.22 can now natively monitor Android applications.

On the software side, the company has updated a number of its applications that address both development and operational performance of enterprise applications.

One application that has been updated has been HP Anywhere, a platform that provides a way to write a mobile application that can run across both Apple iOS and Google Android devices. Based on the Apache Cordova framework, HP Anywhere uses open Web technologies such as HTML5 and JavaScript, as well as application containers designed to work with specific system calls found in iOS and Android.

The update to HP Anywhere, version 10.01, adds in additional security tools to the containers and offers a new API that third-party mobile device management software can use to gather more performance information about the application.

HP also updated its HP Real User Monitoring (RUM) software, part of the Application Performance Management (APM) portfolio. RUM monitors how people use the applications on their mobile devices. It

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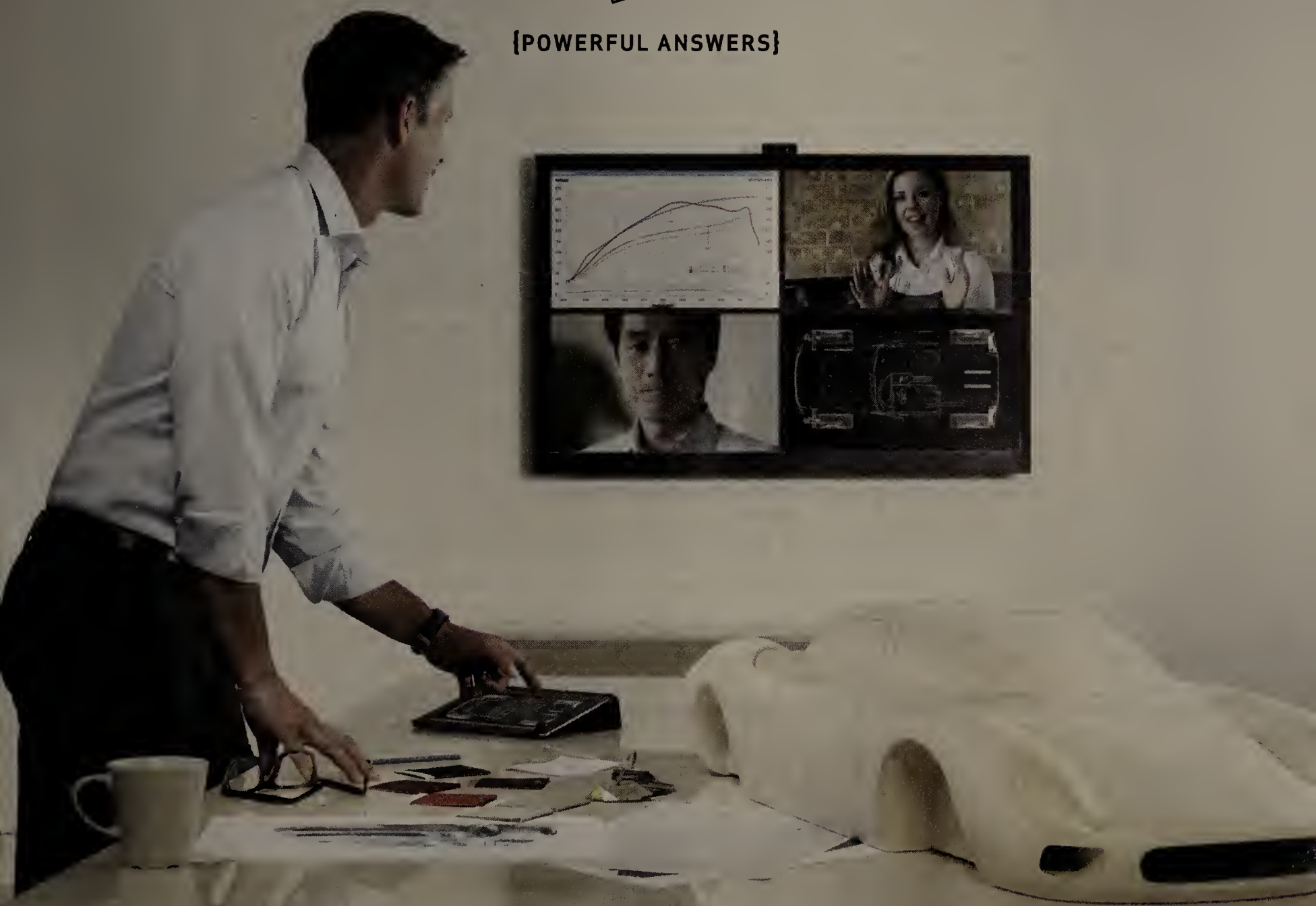


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# Network builders tackling cell vs. Wi-Fi choices

BY STEPHEN LAWSON, IDG NEWS SERVICE

**MOBILE USERS** can probably look forward to being automatically transferred from cellular to Wi-Fi networks in the near future, but going back and forth for the best possible performance is another matter.

Software now in the works will use real-time knowledge about network conditions to make lightning-fast decisions about the best system for each user to be on at a given moment. The idea is that just because there's a Wi-Fi network nearby, doesn't necessarily mean your smartphone should start using it. If every subscriber near that hotspot got switched over to it, the Wi-Fi experience could suffer.

It's already common for Wi-Fi networks in public places to get overloaded at busy times. Automatic handoffs from cellular to Wi-Fi, while convenient, won't make that situation any better. To prevent those overloads, networks will need more management smarts, said Daryl Schoolar, an analyst at Ovum.

That's why both Ericsson and Nokia Siemens Networks announced technologies at CTIA Wireless recently for so-called real-time traffic steering. But the collection of standards that the industry is currently adopting for easy cell-to-Wi-Fi handoffs doesn't yet include this capability, so it may take a while for carriers to make it available.

Mobile operators increasingly are giving their subscribers access to Wi-Fi, both by deploying hotspots and by partnering with other providers. This can give the carriers extra capacity, without paying for another

spectrum license, in areas where many people gather and use mobile devices. For subscribers, it can mean faster network connections, depending on the cellular coverage in the area.

Emerging technologies can authenticate users and put them on Wi-Fi automatically, eliminating the tasks of finding the network and logging in to it. However, that process is centered on the mobile device, which can lead to problems, said Sheila Burpee Duncan, head of Wi-Fi marketing at Ericsson. A phone or tablet may be set to automatically go onto Wi-Fi wherever it detects the signal, even though it doesn't know whether the Wi-Fi network is overloaded, she said.

The two types of networks still are largely independent, a problem AT&T is looking to solve, said Kris Rinne, AT&T's senior vice president of network technologies. Her company has one of the largest Wi-Fi deployments of any mobile operator.

"Today, they don't know anything about each other, and so you have to introduce that," Rinne said. AT&T expects Access Network Discovery and Selection Function (ANDSF), a specification from the 3GPP, which oversees mobile standards, to help it solve the problem.

However, ANDSF isn't designed to make decisions about network choice in real time,

Ericsson's Duncan said. Instead, it's directed by overall policies that are designed to be changed at particular times, such as when a train is scheduled to arrive at a station. Constantly changing those policies on the fly, such as whenever the station happened to get crowded, would put too big a burden on the network, Duncan said. Real-time traffic steering will complement ANDSF and other standards such as Hotspot 2.0, she said.

Ericsson's traffic-steering feature will be an enhancement to the company's network management software and will arrive by the first quarter of next year. It won't require any special software on handsets, though it will only work with devices that can use Extensible Authentication Protocol (EAP), according

to Duncan. Virtually all smartphones have EAP, she said.

The catch is that, for now, carriers will have to use both cellular and Wi-Fi gear from Ericsson to get the feature, Duncan said. The core of the network can be from another vendor, she said.

If a carrier uses two suppliers for its network, as many do, then requiring special gear may hold up adoption of real-time traffic steering, Ovum's Schoolar said. ■



Ericsson demonstrated real-time traffic steering between Wi-Fi and cellular at CTIA Wireless.

## Rackspace beefs up cloud networking features

BY BRANDON BUTLER

**PUBLIC CLOUD** and managed hosting provider Rackspace has rolled technology from Vyatta into its services, allowing customers to set granulated network segmentation policies that dictate which users and what type of traffic have access to which hosted resources.

Vyatta — a maker of open source networking technology that Brocade purchased earlier this year — specializes in creating virtual appliances to allow for firewalling and blocking certain types of traffic to access endpoints.

Rackspace hopes that customers will use the Vyatta technology along with the company's Cloud Networks, which allows users

to create VPNs. Combining that feature with a Vyatta firewalling product would allow only users with certain credentials or specific types of traffic workloads to access that network, and block any other attempts to use it.

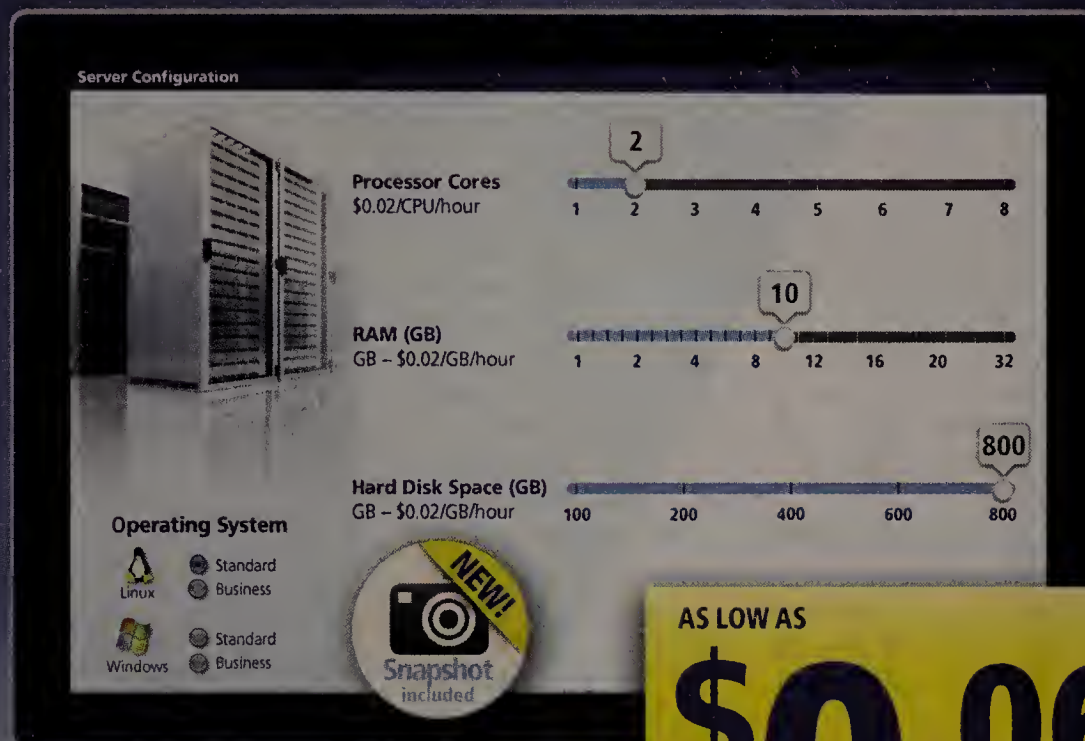
So, for example, if there is a set of servers in Rackspace's cloud holding sensitive documents or information, Cloud Networks and Vyatta could be used to set up a private network connection between certain users and those servers, and restrict all other traffic. Vyatta also allows for layered firewalling, or virtual firewall appliances sitting on either end of the network connection to provide extra security.

Rackspace CTO John Engates says these technology enhancements get customers

"that much closer to proving compliance with a specific regimen using a commercial grade, hardened firewall."

Physical hardware appliances have allowed this functionality in the past, but Engates says incorporating Vyatta technology into Rackspace's cloud allows customers to use a virtual appliance only as it's needed without having to buy a physical box. Customers have also had an opportunity to use open source firewalling tools, but this rollout gives customers a commercially supported product to implement. Rackspace will offer support services for deploying the system as well. It will first be available via a 30-day early adopter period, and then will be generally available to all customers. ■

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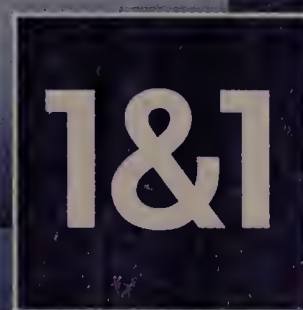
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# Justice Dept. lays out cybersecurity basics

BY MICHAEL COONEY

**THE MANTRA** is old but worth repeating since it's obvious from the amount of cybersecurity breaches that not everyone is listening.

Speaking at the Georgetown Cybersecurity Law Institute last week, Deputy Attorney General of the United States James Cole said there are a ton of things companies can do to help government and vice versa, combat cyber threats through better prevention, preparedness and incidence response.

"Some of this may seem quite basic to many of you, but it doesn't hurt to hear it again. Unless we work together, we will not be able to address the cyber threat successfully," Cole said.

Here are eight key areas Cole said companies should pay close attention to:

**Prevention:** Companies should put best practices and technologies in place. For example, each company needs a strong system of network firewalls. You, of course, need an external firewall. This will serve to protect you from the hacker trying to get inside. But that's not enough. No matter how strong your external firewall is, the likelihood is that a hacker will inevitably break inside. So you also need internal firewalls. These should wall off different departments or divisions in your company from each other. And those areas that contain your company's most sensitive and valuable information should have particularly robust protections. This way, even if a hacker gets onto your network, he doesn't get very far. Or, at least, he doesn't get to your company's most sensitive information.

**Education:** Companies need to educate their employees on intrusion techniques such as spear-phishing or redirecting websites — the scams that use a combination of email and bogus websites to trick victims into clicking on website links or opening attachments. It only takes the carelessness of one employee to let a hacker into your network. So companies need to train their employees to recognize and avoid these kinds of scams.

**Passwords:** The strongest password system has multiple layers, and yes, I know it is a pain, but it is so much less of a pain than losing all your data, your trade secrets, or your financial information. This may require the user not only to type in a number of different passwords, but also to send images or even to do a form of biometrics. You should consider using all of these to protect your core, most sensitive network areas.

**Share:** You're going to need up to date

information on what cyber threats are out there and what they look like. Participating in information sharing platforms like InfraGard can help you in this regard. InfraGard is an FBI-sponsored initiative that brings together representatives from the private and public sectors to help protect our nation's critical infrastructure from attacks by terrorists and criminals. Members have access to FBI secure communications network featuring an encrypted website, web mail, list serves, and message boards. FBI uses the InfraGard website to disseminate threat alerts and advisories. InfraGard also sends out intelligence products from other agencies.

Beyond InfraGard, you can access other information sharing organizations like the Information Sharing and Analysis Centers. ISACs are trusted groups established by critical infrastructure owners and operators. There are different ISACs for different sectors and areas of expertise. Members of ISACs share information with each other and maintain contacts with the government to share and receive cyber threat information. Services provided by ISACs include risk mitigation, incidence response, and information sharing. Depending on the ISAC, you may have access to a 24/7 security operations center, briefings, and white papers.

**Government too:** What can the government do to help with prevention? Well, for starters, we can share actionable information with you. We have collected and shared hundreds of thousands of indicators of malicious activity with the private sector and over a hundred nations. And this is just in the past six months. These indicators include information like IP addresses associated with malicious activity.

You may have also heard about ECS — the Enhanced Cybersecurity Services program. This is a program that has been available to the U.S. defense industrial base. The Department of Homeland Security has been working with cybersecurity organizations from across the federal government to gain access to a broad range of sensitive and classified cyber threat information. DHS provides that information to qualified service providers to help them counter known malicious cyber activity.

**Standards:** The National Institutes of

Standards and Technology — NIST — has the responsibility, along with the private sector, to develop a framework of baseline standards for cybersecurity. The framework's purpose is to assist owners and operators of critical infrastructure to identify and manage risks posed from cyber threats. Once the Framework is established, DHS will establish a voluntary program to support adoption of

the framework. While the framework is directly applicable to critical infrastructure members, there is nothing that prevents all companies from adopting the framework as part of their cyber program.

**Advance prep:** Even a well-defended organization will inevitably experience a cyber incident at some point. Therefore, your company has got to have a strong and comprehensive plan for responding to a cyber incident. Determine what kinds of filters to employ in the

face of a distributed denial-of-service attack, how to implement mechanisms to shut down access to important sectors of your computer systems, procedures to change passwords and access controls, and provisions to preserve all your critical data to ensure continuity of your company's operation if your data has been destroyed. And importantly, mechanisms to notify customers or employees if personally identifiable information (PII) has been stolen.

**Financial obligation:** Finally, think about your cyber protection program from the perspective of your shareholders. The SEC has issued specific guidance regarding disclosure obligations relating to cybersecurity risks and cyber incidents. The guidance, which was issued in 2011, makes clear that there are particular obligations that apply before, during, and after a cyber incident. But you should think about your disclosure obligations beyond just particular cyber incidents. If you had to explain to your shareholders how you are going about protecting the most valuable trade secrets of your company, or its financial information, or its critical operations, or the PII of your customers or employees, what would you want that explanation to look like? What kind of impression would you want the investing public to have about your dedication to cyber protection. ■



U.S. Deputy AG James Cole

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# 7 steps to securing Java

Warnings from Homeland Security should prompt security pros to harden enterprise nets against Java-based exploits

BY SUSAN PERSCHKE

**JAVA, THE** popular OS-independent platform and programming language, runs on just about every kind of electronic device imaginable, including computers, cell-phones, printers, TVs, DVDs, home security systems, automated teller machines, navigation systems, games and medical devices.

In response to successful Java-based exploits against companies like Twitter, Facebook, Apple and Microsoft, and continued concern over “zero-day” security flaws that could allow an attacker to remotely execute malicious code that could compromise vulnerable systems, the U.S. Department of Homeland Security’s Computer Emergency Readiness Team (CERT) has issued multiple security advisories concerning Java.

Here are seven steps you can take to protect your network against Java-based exploits. Given its ubiquity, completely removing Java is probably out of the question for most organizations. But here’s a seven-step action plan that won’t necessarily guarantee security, but will help mitigate threats by creating awareness, hardening systems and reducing attack vectors.

## 1. Perform an impact analysis

A good starting point is to identify where and how Java is used both inside and outside the organization. Does your organization provide Java-dependent applications that are accessed by vendors, clients and/or the general public? Unless you have already taken steps to limit the use of Java, you most likely will find it present in most Internet browsers, as part of the OS (especially certain versions of Mac OS) and in any number of popular applications. The latter is probably going to be the biggest unknown, as a vast number of commercial and open source software applications are built on the Java platform. Start by ferreting out which applications use Java. Is the app business-critical? Knowing the full scope of your organization’s dependence upon Java-based apps and platforms is a necessary prerequisite to controlling risks.

## 2. Keep Java updated and patched at all times

It is of paramount importance to keep all computers and devices up to date with the latest

version of Java. Oracle supports only the latest version — no security patches are available for previous versions. Obtain updates directly from Oracle to reduce the risk of code injection. Another important step is to uninstall older versions of Java manually, as simply installing the latest version does not necessarily ensure that older versions are removed. Consider limiting the use of Java-based apps to virtual machines that can be started up when needed and left unpowered when not.

Also keep in mind that some applications may use earlier versions of Java, and these could break after updating to the latest version. If your app relies on an outdated version of Java, this poses a much greater security risk and any outdated apps should be updated or replaced.

## 3. Manage Java Control Panel settings

There are numerous settings available from the Java Control Panel (available on both Windows and Mac clients). These provide fairly granular control of how Java is configured on client computers, from automating updates to managing security settings. Automatic updates can be configured to notify or download the latest update, but regrettably there is no current enterprisewide capability to automatically install updates. This means manual steps are needed to ensure the latest updates are applied.

As for security settings, the last few updates of Java Version 7 have been automatically set to use the “high” security setting, which is designed to prompt users before running unsigned or self-signed applets. This is a change from recent versions of Java where the default was “medium.” From the Java Control Panel, you can also disable Java when you’re not using it, but there are some reports of unsigned and self-signed applets being allowed without prompting when you re-enable Java.

## 4. Harden Web browsers

Wherever possible, disable Java in Web browsers. If for some reason this is not an option, at least consider disabling remote access to Java applets. One solution is to use a proxy server that restricts remote Java requests, but allows them locally.

Another approach recommended by

some IT administrators is to use two different browsers, one that has Java enabled for use when you absolutely need to access sites requiring Java and one for all other browsing. Enforcing this in the enterprise might be challenging, but you could set up proxy rules that only allow one type of browser to access Java sites, while blocking others.

## 5. BYOD endpoint control

In this age of bring your own device (BYOD), grappling with the many personal devices employees use to connect to the corporate network presents its own set of challenges. Java is widely used in mobile applications, so you may want to develop corporate policies to govern how BYOD access is provided. Several of the newer “smart devices” running Android, iOS, Windows Phone and BlackBerry 10 operating systems do not embed Java. However, the Nokia 40 series and the Bada operating system developed by Samsung, an OS that is becoming more popular, are both Java-based. Also, it should be noted that since Java ME (Micro Edition) is restricted to JRE 1.3, it is somewhat unclear if any of the latest vulnerabilities are present in Java ME. However, by implementing endpoint control policies, you can ensure that access to the enterprise network is restricted to only certain types of devices with the latest updates applied.

As mentioned in the introduction, Java is also used in a variety of other devices such as printers, security systems, payment terminals, etc. Try to identify all devices used in your organization that rely on Java and work closely with vendors to manage risks. Depending on the size of your organization, this may require a task force.

## 6. Review Java impacts on corporate websites and customer portals

Corporate websites are important marketing tools and frequently also a considerable source of revenue through e-commerce. If your website uses Java applets, it might be time to make some changes as you don’t want to be caught with critical website functionality inoperable due to visitors having disabled Java. Also, when dealing with public end users, you may encounter instances where

► See **JAVA**, page 18



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# Lync-Skype integration live now worldwide

BY JUAN CARLOS PEREZ,  
IDG NEWS SERVICE

**MICROSOFT HAS** completed the first phase of the integration between its enterprise unified communications (UC) Lync server and its Skype consumer IM and IP telephony network.

The company announced on Wednesday that it's now possible for Lync and Skype users to contact each other, engage in IM text sessions and communicate via audio calls. Videoconferencing integration will be delivered later.

Microsoft disclosed its Lync-Skype plans last year, and in February demonstrated the interaction between the two products for the first time, promising global availability of the first phase of the integration in June of this year, a deadline it has now met.

The interoperability works both for companies that have Lync 2010 and Lync 2013 installed on their own servers and for companies that use it as part of the Microsoft-hosted Office 365 suite, whose other components include Exchange Online and SharePoint Online. Skype users must have the latest client software for Windows or Mac OS.

Lync is used by more than 90 of the Fortune

100 companies, and the product provides voice communications for 5 million enterprise users, while Skype has 300 million active monthly users, according to Microsoft.

Enterprises can benefit from the integration in two main ways, says Henry Dewing, a Forrester Research analyst. First, Lync users will be able to communicate with customers, partners and other outside parties who use Skype. Second, Lync customers will be able to have some users on Lync and others on Skype.

"The federation of Lync and Skype will enable closer communications and the sharing of presence and availability data, making communications more efficient," Dewing says.

Security and compliance concerns about using Skype — a consumer service — from enterprise IT leaders shouldn't be major at this point, he says. Microsoft owns both products and has been working on the integration for a while, and even before the \$8.5 billion acquisition in 2011, Skype had been strengthening the service for workplace use, releasing a version of called Skype for Business, Dewing says.

At L'Occitane en Provence, the French skin care and beauty products company, the

Lync-Skype integration has been in demand by its users, according to Stephen Roux, the company's infrastructure manager. L'Occitane standardized on Lync years ago for telephony, videoconferencing, IM and presence.

"In a perfect world everybody would use Lync but that's not the case. We have to interact with partners and customers, and most of them are already using Skype, so it makes a lot of sense for us to be able to communicate directly with Skype users from our Lync infrastructure," he says. "It will make our users more productive."

Of course, in a really perfect world, there would be universal interoperability among IM networks, but that is far from the case. Despite some improvements over the years, like the development of the XMPP (Extensible Messaging and Presence Protocol) protocol, many IM networks remain walled gardens, Skype being an example.

In a setback to interoperability, Google, which had been an advocate and backer of XMPP, supporting it in its Talk IM service, recently announced that its new IM and audio/video product Hangouts has been built using proprietary technology and doesn't offer server federation based on the standard protocol.

Lync Server, the version of the product that is installed on customer premises, supports XMPP and has some capabilities to interoperate with proprietary IM networks, like the ones from AOL and Yahoo, as described in Microsoft documentation. However, Lync Online, the hosted version in Office 365, doesn't offer this interoperability.

However, even the existing federation between Lync Server and the IM networks from Yahoo and AOL are being phased out, according to a spokeswoman for Microsoft, who says the agreements with those two providers "are winding down."

"Service will continue with Yahoo through June 2014 for customers licensed with the Microsoft Lync Public IM Connectivity User Subscription License (PIC USL)," she said via email, adding that the PIC USL is no longer available for purchase for new or renewing agreements.

"Customers with licenses purchased prior to this date will be able to continue to federate with Yahoo until the service shutdown date or their license expiration. Federation with AOL will continue through June 2014 for existing customers," she says.

For now, Lync customers can at least count on the interoperability with Skype. ■

## ► JAVA, from page 16

users have not only disabled Java applets, but JavaScript as well. To ensure high availability, use detection scripts to deal with this contingency and redirect customers as needed.

## 7 ■ If you are developing in Java, do so responsibly

If you are developing in Java, don't add to the industrywide problems by producing unsigned or self-signed apps. Sign all apps using a trusted certificate authority and adhere to other industry best practices for Java development. In an effort to encourage developers to use trusted certificate authorities, Oracle's Java 7 Update 21 raises more red flags to users about the security risk of running unsigned applets.

Some third-party solutions such as the Entrust Authority Security Toolkit for the Java Platform allow Java developers to add security-related features like encryption and digital signatures to their applications.

## Conclusion

Of late, Oracle has significantly stepped up its efforts to correct flaws and vulnerabilities in its Java platforms. However this is playing out as a game of cat and mouse, as new exploits are discovered sometimes within hours of the latest patch. The rapid change cycle is also causing other collateral consequences. Some users report being able to run unsigned applets in IE9 on Windows 7 even if the settings are "high" or "super high." Others are reporting issues with legacy applications not running properly under the latest releases of Java 7. Suffice it to say that many Java platforms and applications are in a state of flux, with security concerns remaining. Hence the need to keep a watchful eye. Oracle declined comment on the topics in this article. ■

*Perschke is CSO for Arc Seven Technology. She is also an experienced technical writer, and has written numerous white papers for a number of organizations, including Fortune 500 companies. Susan can be reached at [susan@arcseven.com](mailto:susan@arcseven.com).*

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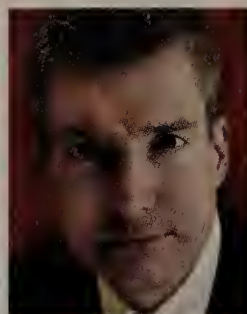
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## View from inside Verizon's security team

**B**ryan Sartin is director of Verizon's RISK Team, the communications provider's computer forensics practice, which is also the group that helps create the annual Data Breach Investigations Report (DBIR). *Network World* Editor in Chief John Dix caught up with Sartin to learn more about the RISK Team, get his take on the state of enterprise security, and discuss new findings from the recently published DBIR report.



Bryan Sartin,  
director, Verizon's  
RISK Team

bringing together facts and evidence and building conclusions and transitioning our findings over to law enforcement to take the final step.

### Why do companies hire you vs. a competitor?

The biggest difference is the reach of Verizon's operations. We have a true international capability and that helps us better understand the legalities and all the rigmarole that goes into international investigations. But there's also the network. I could spend hours on a white board showing you some of the ways we can derive incredible types of intelligence off the Verizon backbone that helps us do things like identify sources. We can perform entire remote investigations without even going to the customer's premises. Figure out who did it, where they came from, what tools and methods they used, and what they took. Then we can pinpoint crimes back to adversaries, link many crimes together or even turn on intrusion detection systems out in the cloud and point them at one or many networks. We have some very unique capabilities.

### Do you get involved with the government at all?

Yes, both as a service provider and also for intelligence sharing. It's become clear that there's strength in numbers when it comes to collecting and exchanging security intelligence, especially understanding the adversaries and how they work. Our entire remote investigations capability is supported by intelligence collection and sharing. The more we know the more we are able to see little facets.

Somebody comes to us and says — "Look, we've got this point of entry and we see activity on these ports at these date and times, and here's where it appears to be coming from." And with good intelligence-based research you can take little artifacts like that and convert them into an entire picture. We know who did it, where they came from, how they got in, see that this is linked to these three other investigations we've conducted, and I can tell what's under that rock before we get there. A lot of that's born out of the sharing we do with government.

### So how bad is it out there?

I don't want to scare anybody with fear,

### You lead what looks to me to be a security SWAT team. Tell us about it.

RISK stands for Research, Investigations, Solutions and Knowledge, and we have two specific areas of focus. One is for everything that Verizon does in cloud, IT and security. We handle incidents of a civil and criminal nature for Verizon customers, whether they are on or off the Verizon network. And that spans digital forensics, computer incident response, IT investigations, but also electronic discovery. And in that capacity we're one of the largest IT investigative entities in the world. We operate digital forensic labs in five countries and have full-time investigators in 21 countries.

Our second area of focus is intelligence. Case by case, in data centers around the globe, we pick up little artifacts of intelligence from our field work and process and convert that into knowledge we use to improve products, drive innovation and secure Verizon. But we also deliver that security knowledge to clients on a regular basis.

### Was RISK home-grown or did it stem from acquisitions?

It's grown in a variety of ways. Verizon has had security capabilities for a long time because security and Internet services just go together hand in hand. If you're going to provide someone access to the Internet, then helping them access it in a secure fashion is something that makes sense. I came in from the Cybertrust acquisition in 2007, and a large percentage of my team did as well. I believe Cybertrust was the largest privately held information security services company in the world at the time.

We thought we had the brightest minds, the best people and the best tools at our disposal, but it was one of those things where

you didn't realize what you didn't have until you became part of this great big Verizon. Then we started getting access to the assets here and people from other Verizon acquisitions over the years. So we came into an environment where there was a very established security services capability and reinforced what was there.

Today we have a little more than 100 people and four background types on the team. A good percentage is from law enforcement, another is from military or military intelligence, which plays very well into that second focus I mentioned, folks like myself have more systems engineering backgrounds, and then you have others from institutional IT type roles.

### What types of things do you get called in to examine?

The most common thing is the IT investigation. We're called in when the customer believes there is enough evidence of a security breach to retain an outside professional investigations company. So typically you have employees or customers complaining of fraud, or, in the last year or two, the FBI reaching out to a company saying, "Look, here's some things you need to know. You may have suffered some type of APT attack in and around this data and time." So they call us with what they believe is hard evidence of a security breach and our job is to look at their great big network and all the moving parts and determine, did this or did this not happen?

And based upon the facts, can we prove or disprove the source, show how they got in, what they took, make sure we can stop the bleeding and contain the situation, and then finally do what's necessary to set the stage for prosecution? So we often times play a pre-law enforcement type role where we're

uncertainty and doubt. That's certainly not the point of our data breach report. It's really about understanding the nature of the threat and how to defend against them. But the unfortunate truth is there's more concurrent criminal activity out there facing companies than ever before. It's more tumultuous and there's more diversity in the threats they face.

**In your data breach report you talk about hactivism, espionage and financially motivated crime. Have the rankings of those threats changed?**

Significantly, yes. Financial crimes still dominate the landscape, but last year hactivism really blew us away. People naturally associate hactivism with distributed denial of service, but suddenly hactivism accounted for more stolen records than financial crimes. And this year the big change is around cyber-espionage. People have asked us — "Where is this APT thing I keep hearing so much about?" And no matter where we looked there just wasn't much data on it to speak of. But now in this past year cyber-espionage — stealing intellectual property or other types of information — accounts for about 20% of the cases.

**Anything new on the insider threat front?**

Insider threats do factor into our findings. Generally people have this perception that most of their exposures and moving parts are internal so, threat landscape-wise, the biggest danger is inside jobs. That was a myth we tried to bust in the past by showing that inside jobs are not only less than you expect, but they're considerably less.

In the last few years they've been below 5%, and in this last year they are below 1% of the overall threat landscape. It's external breaches that really hit victims the hardest, irrespective of industry. This year we've seen inside jobs jump up a bit, but it's still smaller than people expect. It's just that they do tend to hurt victims more when they happen because there is a larger average record set stolen on an inside job.

**Turning back to cases where you get called in to investigate, are there any stories you can share about things you encounter?**

Sure. One involved a large international company with a very recognizable brand name that had received an extortion attempt that started with a series of emails. As is typical in these things, no one notices the first five or six emails, but finally one of the execs saw this thing and thought it sounded pretty real. They notified somebody in security and ultimately we were engaged to investigate. They had us on retainer, a guaranteed 24-hour response to computer security emergencies,

so they picked up the phone.

To make a long story short, the extortionist was in essence holding them up for ransom. He had some information and some intellectual property of theirs and he threatened to release this information if our customer did not meet his demands.

When you have an extortion attempt, typically you want to keep the extortionist communicating because the more communications you have the greater the possibility to identify his location or discover some other useful information. In this case the perpetrator seemed quite chatty. And what we found was he would be willing to drop the whole extortion attempt if we were willing to offer him employment. So we arranged, believe it or not, a job interview at the local airport and he in fact showed up for this meeting. Only the folks who sat down and interviewed him were members of law enforcement.

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The unfortunate truth is there's **more concurrent criminal activity out there** facing companies than ever before.

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**That's crazy. Any more?**

There was the one more recently. A customer called us and said, "We've got a situation where an employee's credentials appear to have fallen into the Chinese government's hands. We're getting many connections in the middle of the night using this employee's credentials, only this employee is here in the United States, right in a nearby office. He's working in the office every day."

That's not unusual. Four out of five attacks in our data breach report this year involve exploited or stolen credentials. So we started to dig in, looking into how they were stolen, if others were stolen, try to see what might have been touched, and figure out how to block future access.

But we started by talking to the developer whose credentials were taken. Oftentimes the former cops on the team can sit down with somebody and get a feeling pretty quickly about whether or not they're squirrely. And the more we pushed this guy the more squirrely he became, and finally it turned out he

had an interesting take on his job. He saw his job as an outsourcing opportunity.

He was shipping his work overseas to a software development firm in China. He would get assignments, ship those assignments out and they used his ID to log in to the systems and actually do all the staging, test and development and actually move stuff into production. He'd show up in the morning and say, "Yeah, look at what I produced," and then he'd spend the rest of the day surfing eBay.

**What do you make of the oft-referenced idea that the bulk of security problems stem from the fact that security tools are not configured correctly?**

That's true, to a very great extent. Many intrusion detection systems, for example, are not configured properly, but even when they are they still generate too much noise. If someone opens up on average 90 alerts a day per IDS probe and each one of those takes, what, something 3.9 minutes to vet, it's only a matter of time before they just don't notice the real important stuff breeze by.

**There is a lot of talk about big data being the answer. What do you think?**

What we're doing with the data breach report is an example of looking for commonalities or patterns inside big data, but where the rubber really hits the road is around sharing intelligence. I think sharing indicators and the TTPs — tools, techniques and procedures — of adversaries carries a lot more power than most people know. And it takes a big data approach to really put this kind of stuff to good use. That's something we're doing.

I mentioned that remote investigations capability, which is all based upon intelligence that we collect and we share with third parties, and we link many cases together based upon big data mining. If you put together the adversary's IP addresses, the tools, the techniques, the malware hash patterns, you put all this stuff together in this big data mine, then when you get one little ingredient from a customer and you can go back in and say, "Well, that's interesting. They complained about activity on these ports at these times and they saw this particular source," and you can bring up those records and quickly tie that back to an adversary.

"You know, I saw that adversary in at least 17 other crimes over the last 18 months and almost all of those crimes use this point of entry and this malware and they were found on these kind of systems in these folders, and they stole this kind of data, and here's how they got it out." And you can build accurate predictors on what you're likely to find in the on-site investigation, all just out of that data mine. ■

## TOOLS

# Gearhead's 2013 Summer Reading List

**A**s I note in *Backspin*, as of the 24th of this month, I've been writing for *Network World* for 20 years and 6 days. And my first Gearhead column published a mere 17 years, 4 months and 5 days ago. I'm going to leave the peering into the rearview mirror to see how we got here to *Backspin* and, instead, do as I always do: talk about cool, geeky stuff you need. Today, I have your summer reading assignments.

First, "Exploding the Phone: The Untold Story of the Teenagers and Outlaws Who Hacked Ma Bell," by Phil Lapsley. Lapsley takes us through the multiple generations of the telephone system — from the system driven by switchboard operators to the mechanical switching system (invented by an undertaker, no less) and to the digital switching systems — and documents what he calls "the billion dollar flaw." Well-researched (the book took five years to write), well-written and, with a foreword by Steve Wozniak, one of the most famous "phone phreaks," "Exploding the Phone" is hard to put down, even by people who aren't geeks. Highly recommended.

My next choice, "The Argument Culture: Stopping America's War of Words," by Deborah Tannen, is an old one that I recently reread. This is a book that should be studied by everyone who has to deal with argumentative people (which is to say, everyone you come into contact with). Published in 1999, this book examines how we communicate at home, at work and in the media, and how argumentation distorts intent and corrupts cooperation.

Tannen is one of the most famous linguists and her insights into how verbal conflict gets in the way of getting things done should be read by everyone who has to deal with the politics of the corporate world.



Mark Gibbs' Gearhead

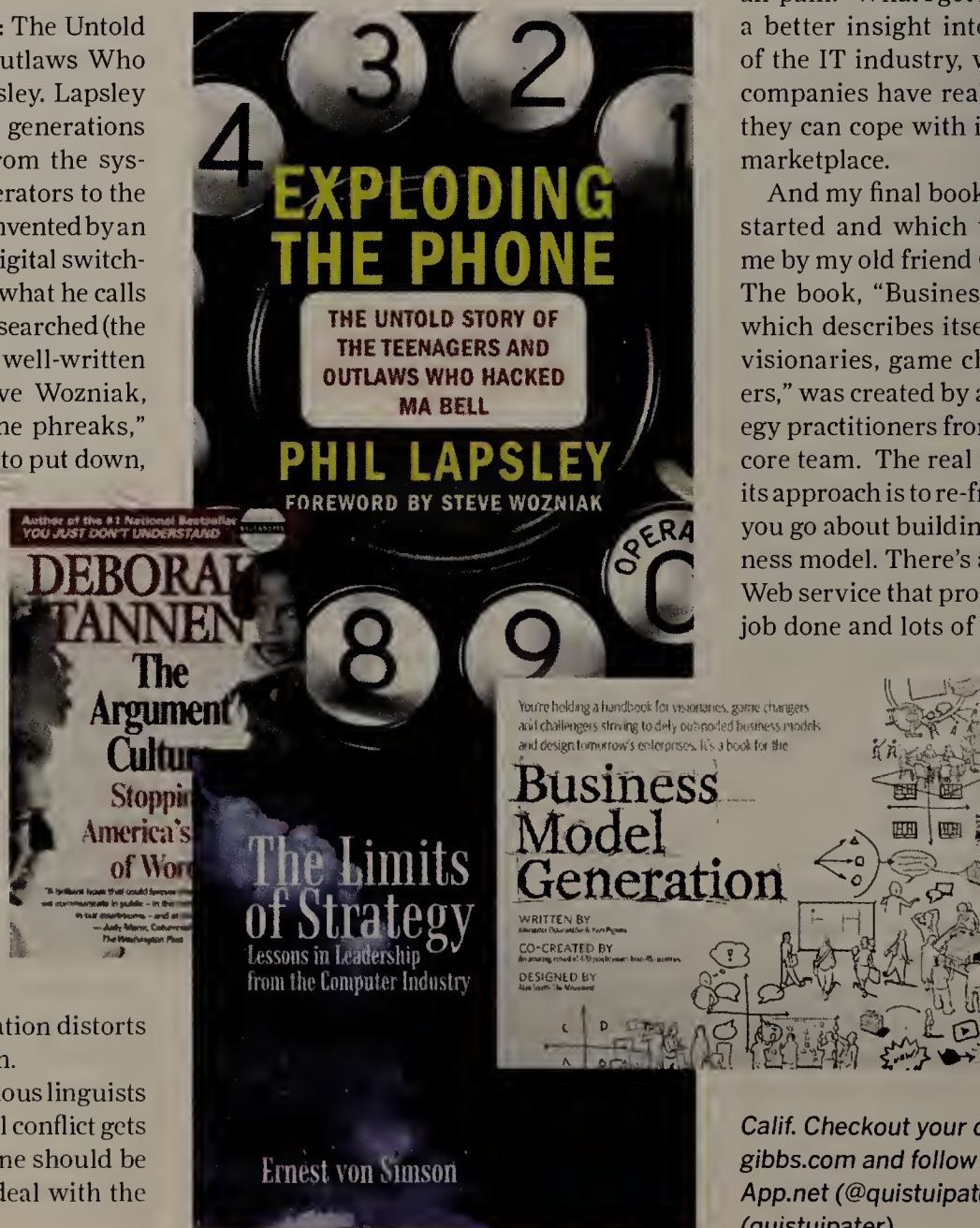
Another book I highly recommend for everyone in IT is "The Limits of Strategy: Lessons in Leadership From the Computer Industry," by Ernest von Simson. Von Simson has had a fascinating role in the IT world through his consultancy, The Research Board, where he got to work with a who's who of the computer business. Von Simson discusses why businesses fail, why corporate "vision" is often inadequate, and how the best laid plans of mice and CEOs "Gang aft agley, An' lea'e us nought but grief an' pain." What I got from this book, beyond a better insight into the formative years of the IT industry, was that even the best companies have real, hard limits on what they can cope with in terms of a changing marketplace.

And my final book choice is one I've just started and which was recommended to me by my old friend Chuck Pappageorgiou. The book, "Business Model Generation," which describes itself as "A handbook for visionaries, game changers and challengers," was created by a coalition of 470 strategy practitioners from 45 countries led by a core team. The real value of this book and its approach is to re-frame and organize how you go about building or examining a business model. There's also an iPad app and a Web service that provide the tools to get the job done and lots of examples of how real-world business models work.

So, there's your summer reading list. I expect a report from each one of you. And if you've got any "must read" books of your own, let me know. ■

Shhh, Gibbs is reading in Ventura,

Calif. Checkout your choices at [gearhead@gibbs.com](http://gearhead@gibbs.com) and follow him on Twitter and App.net (@quistupater) and on Facebook (quistupater).



## GADGETS

# Logitech impresses with its wireless headset



Keith Shaw's  
Cool Tools

**THE  
SCOOP**

## Logitech Wireless Headset Dual H820e

by Logitech, about \$200 (mono version costs about \$180)

► **What it is:** This headset includes stereo earphones and a flexible boom microphone (it can be rotated so the microphone can be used on the right side or left side), and is geared toward business users who use unified communications (such as Microsoft Lync or Cisco platforms) or PC-based softphones (including Skype and Google's voice apps). The headset connects wirelessly through a nice, small base station, which then connects to a PC or Mac via USB cable. The base station can also recharge the headset when you're not using it for calls. Logitech offers two models — mono (one ear) or stereo (sound in both ears).

► **Why it's cool:** The headset's wireless connection uses the Digital Enhanced Cordless Telecommunications (DECT) standard, which lets you move up to 300 feet away from the base station. In my tests, I could wander around most of the *Network World* editorial offices without experiencing any loss in sound or voice quality. The additional roaming area, compared with Bluetooth's typical 30-foot range, makes it useful if you need to get up from your call to grab something, or if you're working at home and need to make a fridge or bathroom run during a call (just be sure to mute the microphone during those situations!). The DECT standard also reduces any potential interference issues that you might discover with Bluetooth or Wi-Fi devices in a busy office environment.

Cushions on the ear pads and under the bar connecting the ear pads (on top of the headset) make it comfortable enough to wear on your head when you're not on a voice call — if you like to listen to music while working, you can keep these on most of the day without worrying that your ears are going to get sore.

In my tests, the sound quality via a Skype call was pretty good — definitely better quality than relying on the microphone built into the PC/Mac. The headphones picked up some external noise during the call, but that could be Skype compensating for volume changes from the caller on the other end — if the person you're calling moves away from the microphone, Skype boosts the sound. But the external noise was never bothersome enough during my tests to make it a nuisance.

► **Some caveats:** Unlike some other business-focused headsets, you don't have any flexibility on wearing styles — you are limited to the over-the-head style, which may turn off some users who prefer a behind-the-head version. The unit also doesn't offer different-size ear pads — one size fits all here. The \$200 price tag may scare off some people — although you could switch to the less-expensive mono version, or you could look at Logitech's USB corded model (the H650e), which costs about \$90 (or \$80 for the corded mono version). These would be recommended for users who make a lot of phone calls via their UC or softphone systems. Other inexpensive options are available if you are looking to just have a headset for occasional calls or if you want to listen to music while working.

► **Grade ★★★★★ (out of five).**

While we tested the stereo wireless headset, Logitech also offers a mono version (shown here recharging in the base station).





*Four must-have features of a successful private cloud*

# HOW TO BUILD A PRIVATE CLOUD

BY CHRISTINE BURNS

A **PRIVATE** cloud looks and acts like a public cloud, giving your corporation all the speed, agility and cost savings promised by cloud technology, only it's single-tenant, and that tenant is you, right? Well, that's the goal, but it's not quite the reality yet for most enterprises.

The definition of enterprise private cloud currently exists on a continuum. This lack of commonly defined ground is proving to be a bit of a stumbling block to achieving the velocity and dexterity promised by private cloud vendors inside traditional IT settings.

Gartner doesn't track private cloud installations at this time, says Aneel Lakhani, research director for virtualization and cloud.

"There is zero consensus on what enterprise IT considers private cloud to be. Installations labeled 'private cloud' now range from data centers having several virtualized machines, to having some very basic ability to automate processes, to possibly having some self-service components. With that much variation, the results of conducting a self-reported study based on this space would be

3 OF SIX

SPECIAL ISSUE |||||

ENTERPRISE CLOUD SERVICES

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completely invalid," Lakhani says.

Forrester Research late in 2012 published results of its Forrsights Hardware Survey, in which 31% of the more than 2,300 midsize and enterprise IT respondents claimed to already have a private cloud in place, while another 17% said they were going to put one in sometime this year.

"But if you dig a deeper into what this self-described group is actually doing, you can see that they may be using some sort of private cloud portal with some underlying virtualization, but the number actually tapping into the services that would give them the core value-add propositions of speed and agility, is really quite low," says Lauren Nelson, Forrester's private infrastructure as a service (IaaS) cloud lead. Her firm sets that number between 7% and 13%.

That's the dirty little secret about virtualization in the enterprise, says Peder Ulander, vice president of product marketing for cloud platforms at Citrix. "Yes, 90% of IT departments have been virtualized, but those virtualized data centers are generally only being utilized to 30% of their capacity," Ulander says. "Private cloud is really about driving efficiency and nailing the optimization."

Objectively speaking, analysts, vendors pushing private clouds, and practitioners hired to implement private clouds say there are up to four basic tenets that must be in operation for an enterprise IT department to fully take advantage of a private cloud.

*Burns is a freelance writer. She can be reached at cburns1227@gmail.com.*

## 1. THERE MUST BE A CONVERGED INFRASTRUCTURE.

"We're talking at all levels. Servers must be virtualized. There has got to be underlying software defined networking and a converged storage fabric," says Andrew Hillier, CTO of CiRBA, a supplier of capacity management software for virtualized and cloud environments in Toronto.

Josh McKenty, CTO and founder of OpenStack-based private cloud provider Piston Cloud Computing, echoed Hillier's requirement of a fully converged infrastructure. But McKenty, who has been working on private cloud networking issues since 2008 when he was working at NASA and served as a technical lead on the project that evolved into OpenStack, says corporate IT must also factor in disaster recovery, replication and placement logic for their private clouds. Also, private clouds are likely to exist across multiple data centers, so as to support another tenet of cloud computing, removing any single point of failure in the service.

"This is not something that is done very well in the public cloud space now and it's an opportunity for corporate IT operations that haven't had sophisticated systems in place to do these things, to leapfrog themselves in that regard in the new era of private cloud," McKenty says.

## 2. THERE HAS TO BE FULLY AUTOMATED ORCHESTRATION OF BOTH SYSTEM MANAGEMENT AND SOFTWARE DISTRIBUTION ACROSS THE CONVERGED INFRASTRUCTURE.

"That is where the cost savings is. Automating deployment and streamlining the human activity previously required to do daily tasks. That is what will eventually drive private cloud sales," says Robert Miggins, senior vice president of business development for Peer 1 Hosting, which has a private cloud offering based on VMware.

You have to improve the provisioning process significantly to legitimately call it private cloud, argues Forrester's Nelson. "If it takes you two weeks to provision resources now, getting that down to two days is not going to cut it. You've got to get it to 15 minutes. You can't be sitting around waiting for various levels of approval to happen because you lose the agility and speed. It's the difference between virtualization and cloud,"

Nelson says.

CiRBA's Hillier agrees that automation is crucial but advises potential customers not to fixate on being able to roll up instantaneous instances. "Going from weeks to deployment to mere hours might just be good enough for your environment," says Hillier, adding that sometimes just being able to reserve cycles in the private cloud days in advance might be a step in the right direction for most companies.

## 3. THERE MUST BE A SELF-SERVICE CATALOG OF STANDARD COMPUTING OFFERINGS AVAILABLE TO USERS ACROSS THE COMPANY.

"The litmus test is whether or not the dashboard is available to business users across the company and not just an interface for traditional IT staff to use to dole out IT resources. Having just the latter, means that IT just has a new toy," says Piston's McKenty.

Bluelock CTO Pat O'Day, whose company is a provider of public and private cloud services, agrees. "True cloud means the users, and not IT, get to control the performance of their applications based on the resources they allocate to them."

## 4. THERE HAS TO BE ACCOUNTABILITY BY WAY OF SOME SORT OF CHARGE-BACK, TRACK-BACK OR SHOW-BACK MECHANISM THAT KEEPS TRACK OF WHICH USERS ARE EMPLOYING WHICH RESOURCES AND FOR JUST HOW LONG.

Enterprise Management Associates analyst Torsten Volk argues that at a minimum providing a show-back mechanism is crucial for any fledgling private cloud. "If you can't at least show who is responsible for the cycles that have been used, then there is no incentive to use those resources efficiently," Volk says.

JC Martin, cloud architect at eBay, which is now running a second-generation private cloud based on OpenStack technology, explains that eBay's home-grown chargeback program works more like a prepaid plan where departments pay up front annually for their anticipated IT service costs. He contends the system also helps cut down on having machines sit idle due to departments holding onto virtual machines when they are not using them. "Having to view reports that hold you accountable is a big incentive not to commandeer machines you can't keep busy," Martin says. ■

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# 5 tips for AVOIDING PRIVATE CLOUD FAILURES

BY CHRISTINE BURNS

**ACCORDING TO** Piston Cloud Computing's CTO, the rate at which his customers' pilot projects turn into production private clouds is pretty typical of most OpenStack-based providers — and it's pretty low.

"Roughly for every 20 pilot projects we open up, we see one of them make it into production," says Josh McKenty, who prior to founding the Seattle-based Piston, worked at NASA and served as a technical lead on the project that evolved into OpenStack, one of three open source infrastructure as a service (IaaS) platforms vying for enterprise attention.

So why do the other 19 drop off? Good question, admits McKenty.

According to analysts, developers and cloud practitioners, the answer turns on miscommunication (between corporate IT department and their potential "customers"), dependencies (on beloved features of gear sitting in the data center or on the network) and unruliness (of applications not built to run on the cloud at inception).

In an effort to increase the chances of *Network World* readers landing a successful private cloud deployment, these experts offer up some tips on how to avoid the typical pitfalls.



## 1. GET OUT OF THE DATA CENTER AND TALK TO ALL BUSINESS INFLUENCERS.

This will help IT execs get a better idea of how the private cloud will eventually be used, advises Marten Mickos, CEO of Eucalyptus, an open source private cloud provider with close ties to Amazon's public cloud scheme.

Mickos tells the story of one large customer doing business in the tech industry that built a private cloud to support development and testing across the company. "Because they didn't fully understand how much their 'customers' were going to consume in the private cloud, they were experiencing 50% growth per quarter," Mickos says. The IT team had based the size of the private cloud on current testing levels, but the growth was seen because the users realized how easy it was to provision and run tests, so they ended up wanting to do more testing than before.

## 2. SET USER EXPECTATIONS.

"Many folks read about the cost savings cloud automation can bring," says Jim O'Neill, CIO of HubSpot, and a self-proclaimed "lover of the public cloud commodity mindset." HubSpot is a supplier of cloud-based marketing services, which plug into Amazon's public cloud and Rackspace's managed private cloud infrastructure.

"So you have to be realistic with your developers and business users about paying for good QoS. Even with all that they've read about the economics of the cloud, you have to make them fully understand that they can't expect five-nines uptime on a three-nines budget," O'Neill says.

The economics of private cloud vary based on the type of workload you want to run there, explains Forrester analyst Lauren Nelson. "Basic compute is cheap in the public cloud if the application is a variable one and it is written to run there. But if you've got an application that is very compute intensive or requires non-standard virtual machines that require increased I/O or memory, it is certainly more economical to run that in a private cloud setting," Nelson says.

## 3. MOTIVATE USERS TO TAKE ADVANTAGE OF THE PRIVATE CLOUD.

Andrew Hillier, CTO of CiRBA, a supplier of capacity management software for virtualized and cloud environments based in Toronto, advises IT departments to consider motivators that might drive users to take advantage of a new private cloud installation. "Mandated use is not out of the question," Hillier adds.

## 4. DON'T STAY WEDDED TO OLD DATA CENTER GEAR.

To best understand what parts of your data center and the underlying network might throw a wrench in your private cloud, you have to be willing to abandon the status quo. Inventory all the gear you use and the non-standard features you employ on it. "And then take some methadone to get off those proprietary features of your favorite router or firewall," McKenty says.

"Yes you might love how a router vendor handles a certain OpenFlow feature, but you might have to give it up. Roll everything back

► See **TIPS**, page 32

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## STACK



## WARS

OpenStack **VS.** CloudStack **VS.** Eucalyptus

BY CHRISTINE BURNS

**OPENSTACK** — co-founded by Rackspace and NASA in 2010 — certainly has the buzz, what with partnerships with AT&T, HP and IBM, to name a few, all of which have promised to use OpenStack as the base for their private cloud offerings.

CloudStack boasts \$1 billion worth of business transactions annually running across their clouds since Citrix released the code (Citrix picked up the technology in its 2011, \$200 million purchase of Cloud.com) into the Apache open source realm in April 2012.

And Eucalyptus — the longest-standing open source project of the three — is banking on its very tight technical ties to Amazon Web Services (AWS) to convince enterprises to go the hybrid route, running their private clouds on the Eucalyptus stack and seamlessly bursting into the Amazon public cloud when necessary.

Those are the strategic battle cries as the

factions spar for positioning as the open source infrastructure as a service (IaaS) stack most tapped into for building enterprise private clouds.

According to a study on data center expansion plans by Campos Research & Analysis and paid for by data center solution provider Digital Realty Trust, 3 in 5 respondents — 300 IT decision-makers at large corporations in North America were interviewed for the study — said that building a private cloud was a primary impetus for their future data center build-out plans.

According to a new forecast report by IDC, worldwide spending on hosted private cloud (HPC) will grow to be more than \$24 billion by 2016.

While most independent sources interviewed for this story contend that OpenStack is a likely front-runner, they all refused to pick an ultimate winner, given that both the definition of private cloud and statistics about the rate at which enterprises are deploying and

taking advantage of private clouds have been slippery little devils to pin down.

“What I can say, though, is that having three open source cloud stack options jockeying for position as the best one out there does bode well for one of them getting to widespread adoption in the enterprise in the future,” says Aneel Lakhani, research director for virtualization and cloud at Gartner.

Open source cloud platforms are attractive for the same reasons Linux took hold: low-cost point of entry and the prospect of application portability.

**Deep dive into the differences**

There are certainly technical differences between the three open source stacks. Independent cloud application development consultant Daniel Kranowski of Business Algorithm, in a talk at the JavaOne conference in late last year, gave a thorough comparison of the stacks based on their architecture, installation, administrative capabilities, security

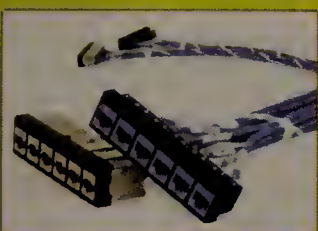
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and high availability.

Kranowski described CloudStack as having a monolithic architecture, installation processes that required a medium level of time and expertise, a strong GUI and an Amazon EC2-like command-line interface (CLI), offering baseline security ties and offering some load balancing capabilities.

Kranowski said that Eucalyptus' architecture comprises five parts, similar to AWS, that its level of install difficulty is medium, and that it has a limited administrative GUI that needs quite a bit of help from a command line counterpart. Also, Eucalyptus has a key management model of security in which the five architectural components need to register with each other.

He described OpenStack as having a fragmented, distributed architecture, rated it as difficult to install, and said it gets driven by multiple CLIs, has a strong, token-based security system and uses Swift — the OpenStack massively scalable redundant storage system — as the linchpin of its high availability story.

But these technical differences are not getting as much attention as the momentum markers each camp pushes to prove why it is better suited for enterprise private cloud business.

For example, the OpenStack camp boasts that at its semiannual OpenStack Summit in mid-April, there were 3,000 conference attendees, 500 code contributors and 8,500 downloads of its most recent code release in just three weeks.

OpenStack competitors are quick to point out that of all three stacks, OpenStack is the most difficult to piece together. "OpenStack is really a technology, not a product," says Peder Ulander, vice president of product marketing for cloud platforms at Citrix.

JCMartin is a cloud architect at eBay, which currently runs 50% of the site's business on a private cloud. Martin explains the current OpenStack-based cloud is his company's second generation, its first one was built on a home-grown platform. He adds that his team wanted to move to open source last year and after an extensive evaluation of the options, selected OpenStack and deployed it themselves.

"You do need a talented group of developers that have experience in day-to-day systems administration and know how to write service automation software and then write code that exposes those services to both IT staff and business end users," Martin says.

Lauren Nelson, Forrester's private IaaS cloud lead, agrees with Ulander and contends that enterprises will most readily consume OpenStack via a provider, as opposed to

downloading a distribution themselves and standing up their own private cloud internally.

"I know of very few companies that will want to pull their top development talent off a revenue-generating project to build an IaaS internally," Nelson says.

But there are literally dozens of companies that either have built or have announced plans for OpenStack-based IaaS products, and each has to demonstrate a strategic advantage for its customers.

### Portability concerns

Some analysts question whether those strategic features will over time become proprietary features that would curtail the whole point of having an open source-based stack: being able to avoid vendor lock-in because writing a cloud application to an open standard is supposed to provide some portability options.

"The race is basically over unless the vendors who are building their private cloud offerings on OpenStack decide to get greedy and built proprietary features that could give them an appealing edge in that market, but could also lead to some levels of OpenStack interoperability issues down the road," says Enterprise Management Associates analyst Torsten Volk.

Gartner's Lakhani says portability is a distant prospect for most enterprises looking to build a private cloud today. He argues it is going to be at least 12 to 18 months before private cloud users are going to really demand that they be able to run applications across OpenStack platforms.

Volk did point to the OpenStack Foundation's efforts to ramp up platform certification efforts to help preclude any issues that might lead to users getting locked into one

OpenStack platform or another due to application dependencies.

Industry watchers say Eucalyptus' strength and its weakness are its ties to Amazon. The company — which brags of tens of thousands of downloads of its Amazon-compatible cloud software and \$55.5 million in venture capital money (including \$30 million picked up last year) — says it offers API parity with 90% of the popular services offered by AWS, including EC2, S3, EBS, IAM, Auto Scaling ELB and CloudWatch. So an application running on a Eucalyptus private cloud using its AWS-compatible services could burst out into the Amazon cloud using those same services.

"When a customer puts in one of our clouds, they become an instant member of the Amazon ecosystem," says Eucalyptus CEO Marten Mickos.

Forrester's Nelson lauds Eucalyptus for having a very complete technology offering that is much more readily consumable when compared to OpenStack. That does translate to a strong hybrid cloud proposition, which many enterprises are considering.

"But on the other hand you've got Amazon continuously downplaying the need for private cloud, so that might not bode well for Eucalyptus' plans," Nelson says.

The Apache CloudStack offering also has strong ties to Amazon public clouds in that it offers an API translator so that applications written for CloudStack can also run in AWS.

And Citrix's Ulander argues that its success with larger deployments — which admittedly tend to be mostly service provider installations — "shows that our stack has gone beyond the typical greenfield and dev/test deployments and into supporting revenue-generating applications." ■

#### ► TIPS, from page 28

so that you are adhering to open standards and not married to any proprietary features," McKenty says.

## 5. MAKE SURE EXISTING APPS ARE MOVED INTO THE PRIVATE CLOUD

According to Enterprise Management Associates analyst Torsten Volk, "A big reason that private cloud projects fail in the enterprise is that they were used only for greenfield projects."

There must be a significant plan in place to onboard existing business application to justify the startup cost for a public cloud. That requires revamping applications so that they are aware that the underlying commodity infrastructure could fail at any moment and know how to be resilient enough to locate another virtual machine to run on, explains Eucalyptus' Mickos.

McKenty advises that IT departments looking to employ private clouds should not fear these potential cloud infrastructure failures, but rather embrace them. "Plan to pull the plug on a few servers every once in a while and see what happens," McKenty says. ■



## ■ Editorial Index

|                             |                         |
|-----------------------------|-------------------------|
| Amazon.....                 | 6, 28, 30, 32           |
| Apple.....                  | 10, 16, 34              |
| AT&T.....                   | 12, 30                  |
| BlackBerry.....             | 16                      |
| Bluelock.....               | 26                      |
| CiRBA.....                  | 26, 28                  |
| Cisco.....                  | 3, 7, 23                |
| Citrix.....                 | 26, 30, 32              |
| Digital Realty Trust.....   | 30                      |
| eBay.....                   | 26, 32                  |
| Entrust.....                | 18                      |
| Ericsson.....               | 12                      |
| Eucalyptus.....             | 28, 30, 32              |
| Facebook.....               | 16, 34                  |
| Google.....                 | 6, 10, 18, 23, 34       |
| HP.....                     | 10, 30                  |
| HubSpot.....                | 28                      |
| IBM.....                    | 6, 30                   |
| Logitech.....               | 23                      |
| Microsoft.....              | 4, 6, 8, 16, 18, 23, 34 |
| Nokia.....                  | 12, 16                  |
| Novell.....                 | 34                      |
| Oracle.....                 | 16, 18                  |
| Peer 1 Hosting.....         | 26                      |
| Piston Cloud Computing..... | 26, 28                  |
| Rackspace.....              | 6, 12, 28, 30           |
| Red Hat.....                | 10                      |
| Samsung.....                | 7, 16                   |
| Savvis.....                 | 6                       |
| Tibco.....                  | 10                      |
| Verizon.....                | 20                      |
| VMware.....                 | 26                      |
| Yahoo.....                  | 18                      |

## ■ Advertiser Index

| Advertiser.....       | Page # ..... | URL .....                      |
|-----------------------|--------------|--------------------------------|
| 1&1.....              | 13.....      | 1and1.com                      |
| Cablesys.....         | 31.....      | cablesys.com/cpp               |
| CenturyLink.....      | 5.....       | centurylink.com/link           |
| Cisco.....            | 9.....       | cisco.com/servers              |
| dtSearch.....         | 29.....      | dtSearch.com                   |
| Hewlett Packard.....  | 17.....      | hp.com/servers/MP3             |
| Hughes Network.....   | 35.....      | HughesON.com/optimize          |
| IBM.....              | 36.....      | ibm.com/systems/moreforless    |
| Microsoft.....        | 2.....       | microsoft.com/versus           |
| PC Connection.....    | 27.....      | www.pcconnection.com/ciscoUCS  |
| Sensaphone.....       | 29.....      | www.sensaphone.com             |
| Verizon Wireless..... | 11.....      | verizon.com/intelligentnetwork |

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## 10 things from my 20 years with NW

**AS I** write this column I'm six days past my 20th anniversary of writing for *Network World*, so I thought I'd write about what's

changed over that time. There are 10 things that stand out.

**10. The demise of Novell, Banyan, 3Com, DEC, Compaq, Palm, Nortel...** it's a long list. While some of those companies simply died or were swallowed up by bigger fish, others have and continue to just slowly wither (I'm looking at you, Novell). What's interesting is how much dumb luck plays a major role in determining success.

**9. The rise of the Internet**, which changed the world. The sad thing is that the U.S., the country that created the Internet, still doesn't completely understand the Internet's importance, which is why we're ranked ninth or 16th — depending on how you measure these things — worldwide in terms of broadband availability, price and speed.

**8. The rise of e-commerce.** E-commerce, the selling and buying of goods and services online, has changed how we do business. When I wrote "Navigating the Internet" back in 1993, the idea that the Internet would become a commerce platform was unthinkable. Now we're arguing about how to collect taxes on online purchases.

**7. The re-rise of Apple.** Perhaps one of the more surprising stories in the last 20 years has been the phoenix-like success of Apple. The big question is whether Apple can still be Apple without Jobs.

**6. The consumerization of IT.** A few years ago the consumer IT equipment market started eating away at the fringes of the enterprise where it was easier and cheaper for branch offices and telecommuters to deploy low-end routers and NAS devices purchased at Fry's than go through the cost and complexity of using Big Boy IT gear.

This accelerated as corporate users began bringing their own laptops and cellphones into the enterprise. Is this creating a huge management mess for IT, or is it a huge cost savings? Whichever it is, it's not going away.

**5. The end of privacy and security.** Along with all the good stuff that the Internet has made possible there's the bad stuff. The 'Net, the operating systems we use, and the services we rely upon all ensure you're trackable and hackable. It's a matter of when, not if.

**4. The rise of Linux and open source.** Who could have predicted 20 years ago that Linux and the open source movement would become such powerful market forces?

**3. The rise of social media.** Facebook and Twitter and the rest. Need I say more? Whether social media as we know it today will survive the next 20 years is debatable.

**2. The rise of Google.** Google, one of the few companies to ever become a verb, was founded in 1998 and its growth and the sheer exuberance of its research and development has been truly astounding.

**1. The death of the PC.** Who knew that the PC would so quickly wane in importance to become just one of the end user computing platforms? According to IDC, 2013 will see PC shipments drop by almost 8%!

It's been a fascinating 20 years writing for *Network World* so far. It's been exciting and, at times, exhausting ... I just hope there's another 20 years of writing left in me. ■

*Gibbs was looking backwards from Ventura, Calif. Your view to gearhead@gibbs.com.*



## Microsoft's opening act since Windows 95

**THE RADIO** ad caught my attention: Microsoft is opening one of its new retail stores in the nearby Natick Mall on June 8 and the

ceremonies will be followed by a free concert that evening by ... Weezer?

I shouldn't have been surprised, because it turns out that Weezer has been Microsoft's house band of sorts for going on two decades. Mall store openings appear to be a somewhat steady gig; for example, there was one last Sept. 29 in Newark, Del., and shows are also planned at store debuts in Portland, Ore., on June 21 and Schaumburg, Ill., on June 22.

But a look at the band's Wikipedia page showed me something about the Microsoft/Weezer relationship that was genuinely surprising: It dates back to Windows 95, the installation CD for which includes Weezer's most famous music video, "Buddy Holly." You'll remember that video as the one where the band plays at Arnold's Drive-in Diner from the TV show "Happy Days," which ended its decade-long run in 1984.

The "Buddy Holly" video is all over YouTube, naturally, but there's also a clip of that installation CD.

Of course, that song was by no means the most famous one associated with Windows 95: That distinction would belong to the Rolling Stones' "Start Me Up," which headlined the advertising campaign.

Now if Microsoft could only get the Rolling Stones to play a store opening ...

### Here's a great definition of a startup

It's an age-old question; two actually: What's the definition of a startup? And when does a startup cease being a startup? We've kicked it around here from time to time and last week they were giving it some thought

at Quora, where the best answer offered was this one from Dave McClure:

"A 'startup' is a company that is confused about -

"What its product is.

"Who its customers are.

"How to make money.

"As soon as it figures out all 3 things, it ceases to be a startup and then becomes a real business.

"Except most times, that doesn't happen."

That about says it all.

### An iPad hits the floor

The other night, while I was doing some work at the kitchen table, the living room produced a crashing sound followed by a child's panicked shriek. My first thought was that the TV remote had once again hit our fake hardwood floor ... but instead it was my iPad.

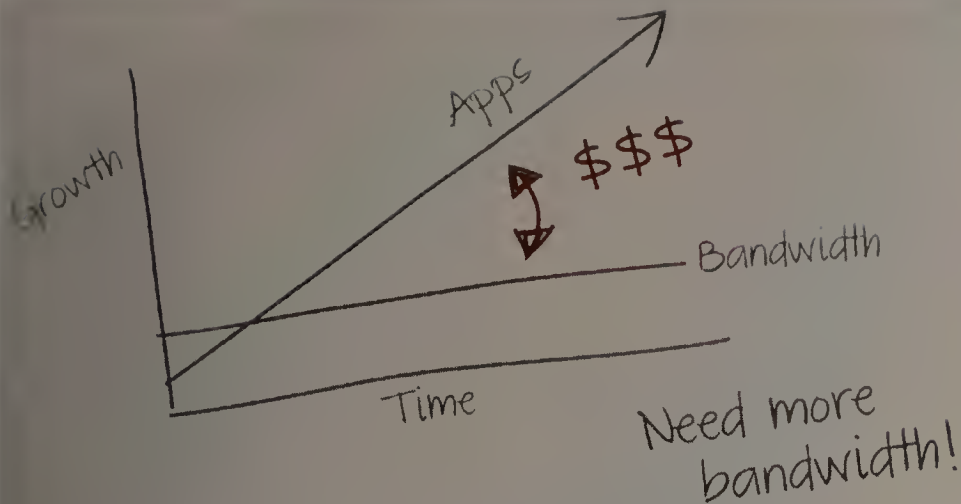
The next shriek was my own.

At first glance it was obvious that the iPad was in pieces; however, it quickly became clear that those pieces were actually the iPad cover and the iPad itself, no longer joined. Bottom line: no damage, not a scratch.

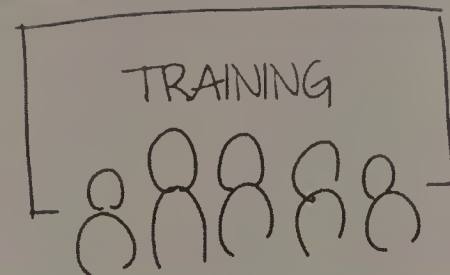
And there may even have been an upside. This incident occurred not an hour after I had lectured the child in question about the need to carry and handle the iPad with two hands as often as possible so as to avoid dropping it ... the lecture obviously went unheeded.

Not so the shrieks. ■

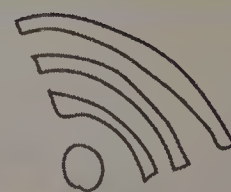
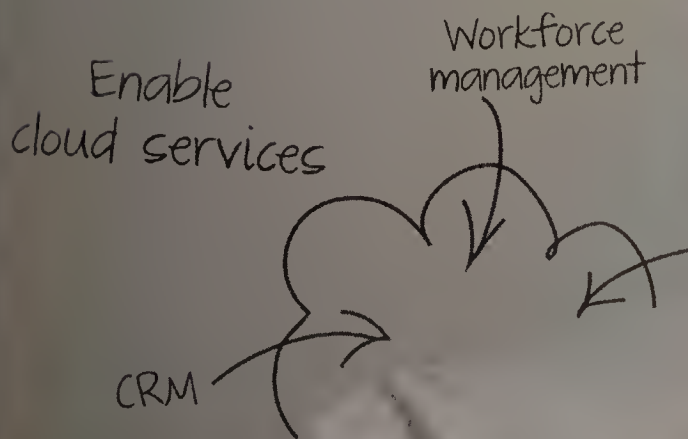
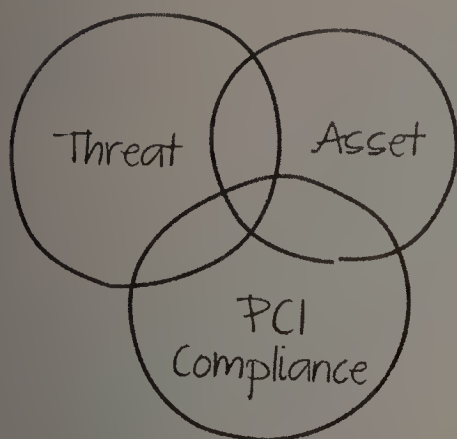
*Weezer concert tales can be directed to buzz@nww.com.*



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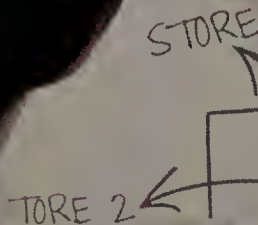


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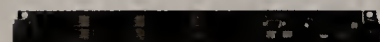
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